# PERFORMANCE ANALYSIS OF ROUTING PROTCOLS IN HETEROGENEOUS NETWORK

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To my truly beloved father, mother, my brothers and sisters, my relatives and friends for their encouragement and support

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In the name of Allah, Most Gracious, and Most Merciful

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# ABSTRACT

Rapid growth of wireless networking technologies with in these recent years have led to the emergence of services such as WiFi, WiMAX and LTE that aim to provide flexible and mobile networking solutions. However the future development local area network will have also to include fixed stationary devices that act as infrastructure or backbone nodes to support reliability of wireless services. In such a heterogeneous network, traffic and node density are among the main network conditions that significantly affect the performance analysis of routing protocols. Thus, our study focuses on investigating the performance of Ad hoc On demand Distance Vector (AODV) and Dynamic Source Routing (DSR) routing protocols in the heterogeneous network environment. Optical Micro Network (OMNET++) simulator is used to analyze the delay, throughput and bandwidth utilization performances of two protocols. Our findings reveal that the performance of Ad hoc On-demand Distance Vector (AODV) has high throughput and less delay than Dynamic Source Routing (DSR). However DSR demonstrates bandwidth utilization than AODV. AODV has lower data delay in high dense network because it can reach destination easily while DSR works well in low traffic environment.

# ABSTRAK

Pertumbuhan pesat teknologi rangkaian wayarles dengan dalam beberapa tahun kebelakangan ini telah membawa kepada kemunculan perkhidmatan seperti WiFi, WiMAX dan LTE yang bertujuan untuk menyediakan penyelesaian rangkaian yang fleksibel dan mudah alih. Walau bagaimanapun pembangunan rangkaian kawasan tempatan masa depan juga bakal mempunyai peranti tetap yang bertindak sebagai infrastruktur atau tulang belakang bagi menyokong kebolehpercayaan perkhidmatan tanpa wayar. Di dalam sebuah rangkaian heterogen, trafik dan kepadatan nod adalah antara parameter rangkaian utama yang boleh memberi kesan analisis ketara kepada prestasi protokol 'routing'. Oleh itu, kajian kami memberi tumpuan kepada penyiasatan prestasi Ad hoc Pada permintaan Jarak Vektor (AODV) dan Dinamik Sumber Routing (DSR) protokol routing dalam persekitaran rangkaian heterogen. Optik Micro Network (OMNET + +) simulator digunakan untuk menganalisis prestasi kelewatan, pemprosesan dan penggunaan jalur lebar persembahan dua protokol. Penemuan kami mendedahkan bahawa prestasi AODV adalah pemprosesan yang tinggi berserta kelengahan kurang daripada Dynamic Sumber Routing (DSR). Walau bagaimanapun DSR mempunyai prestasi penggunaan jalurlebar frekuensi yang lebih tinggi. AODV mempunyai kelengahan data yang lebih rendah dalam rangkaian padat kerana ia boleh sampai ke destinasi dengan mudah berbanding DSR yang berfungsi dengan baik dalam trafik yang rendah.